

CLAIMS

1 1. A method of detecting binding to or reaction with a selective material, the method
2 comprising the steps of:

3 a. providing a sensor comprising:
4 i. a diaphragm comprising a conductive portion;
5 ii. a selective coating on a first face of the diaphragm; and
6 iii. a counterelectrode spaced from and in opposition to the
7 diaphragm, interaction of the selective coating with an analyte deforming the
8 diaphragm and thereby altering a capacitance of the sensor; and
9 b. measuring a capacitance of the sensor to determine a degree of
10 interaction between the analyte and the selective coating.

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1 2. The method of claim 1 wherein the entire diaphragm is conductive.
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1 3. The method of claim 1 wherein the diaphragm is compositionally uniform.
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1 4. The method of claim 1 wherein the measurement step comprises comparing the
2 sensor capacitance to a reference capacitance.

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1 5. The method of claim 4 wherein the reference capacitance is equal to a
2 capacitance of the sensor in the absence of interaction with the selective coating.

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1 6. The method of claim 1 wherein the selective coating comprises a polypeptide.

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1 7. The method of claim 6 wherein the selective coating comprises an antibody.

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1 8. The method of claim 1 wherein the selective coating comprises an antigen.

1 9. The method of claim 1 further comprising the step of exposing at least the
2 selective coating to a fluid, the measurement step indicating whether an analyte that
3 binds to the coating is present in the fluid.

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1 10. The method of claim 9 wherein the fluid comprises a gas.

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1 11. The method of claim 9 wherein the fluid comprises a liquid.

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1 12. The method of claim 1 wherein the deformation is proportional to a binding
2 energy, which indicates a degree of binding.

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1 13. A sensor comprising:

2 a. a diaphragm comprising a conductive portion;
3 b. a selective coating on a first face of the diaphragm; and
4 c. a counterelectrode spaced from and in opposition to the diaphragm,
5 interaction of the selective coating with an analyte deforming the diaphragm and
6 thereby altering a capacitance of the sensor so as to indicate a degree of interaction.

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1 14. The sensor of claim 13 wherein the entire diaphragm is conductive.

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1 15. The sensor of claim 13 wherein the diaphragm is compositionally uniform.

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1 16. The sensor of claim 13 wherein the selective coating covers only a portion of the
2 first face of the diaphragm.

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1 17. The sensor of claim 13 further comprising means for equalizing a pressure on
2 each face of the diaphragm.

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1 18. The sensor of claim 17 wherein the pressure-equalizing means comprises
2 perforations through the counterelectrode.

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1 19. The sensor of claim 13 wherein the coating covers a central half of the first face
2 of the diaphragm.

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1 20. The sensor of claim 13 further comprising circuitry for reporting presence of the
2 analyte.

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1 21. The sensor of claim 13 further comprising circuitry for reporting a concentration
2 of the analyte.

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